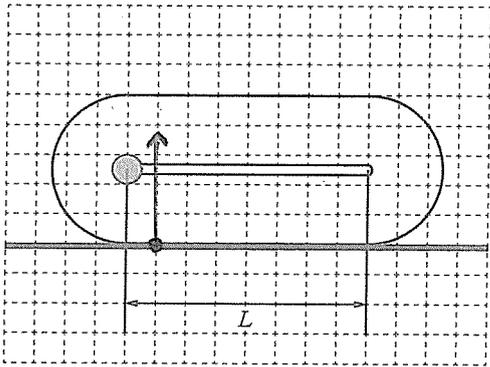


## 解答紙

(3枚のうち1枚目)

〔1〕 (45点)

〔1〕の採点

問 1	(1)	$\tan \theta \leq \mu_0$
	(2)	$g \sin \theta$
	(3)	$\sqrt{\frac{2L}{g \sin \theta}}$
問 2	(1) $N =$	$(m+M)g$
	(2)	$\frac{m}{2(m+M)}L$
	(3)	
問 3	(1) $X =$	$R$
	(2) $\tan \theta_0 =$	$\frac{mL}{2(m+M)R}$
問 4	(1) $\cos(\theta + \phi) =$	$\frac{2(m+M)R \sin \theta}{mL}$
	(2)	$-(m+M)gR\phi \sin \theta + \frac{1}{2}mgL \{ \sin(\theta + \phi) - \sin \theta \}$

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解答紙

(3枚のうち2枚目)

[2] (40点)

[2]の採点

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問1	(1)	$I_0 = \frac{4B_0 a^2}{RT}$	
	(2)		
	(4)	(a) (b) (c) (d) (e) (f)	(5) (a) (b) (c) (d) (e) (f)
	(1)	(開いたとき) $\frac{3}{2}r$	(閉じたとき) $\frac{4}{3}r$
問2	(2)	(閉回路 abcdea) $E = rI_1 + 2rI_3$	
	(2)	(閉回路 abfdea) $E = rI_1 + 3rI_2 - rI_3$	
	(3)	$I_2 = I_3$	
	(4)	$I_1 = \frac{2r+R}{r(4r+3R)} E$	
	(4)	$I_2 = \frac{r+R}{r(4r+3R)} E$	
	(5)	$\frac{r(4r+3R)}{3r+2R}$	
(6)	$\alpha = \frac{7}{5}$	$\beta = \frac{1}{25}$	

解答紙

(3枚のうち3枚目)

[3] (40点)

[3]の採点

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問 1	(1)	
	(2)	$\frac{(L-a-b)d}{a+b} \leq x \leq \frac{(L-a)d}{a}$
	(3)	$L_2 - L_1 = \frac{2dx}{L}$
	(4)	$x = 2.5 \times 10^{-3} \quad \text{m}$
問 2	ア	(a) (b) (c) (d) (e) <b>(f)</b> (g) (h) (i)
	イ	(a) (b) (c) (d) (e) (f) (g) <b>(h)</b> (i)
	ウ	(a) (b) (c) <b>(d)</b> (e) (f) (g) (h) (i)
問 3	(1)	$\sin \theta = \frac{n_2}{n_1}$
	(2)	$L' = \frac{3n_2 h}{\sqrt{n_1^2 - n_2^2}}$